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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,946	01/30/2004	Seung-Chul Park	1793.1066	2489

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EXAMINER

SLAVITT, MITCHELL R

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/766,946	Applicant(s) PARK ET AL.	
	Examiner Mitchell R. Slavitt	Art Unit 2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-10 is/are allowed.
- 6) ☒ Claim(s) 1-4, 11-14, 16-19 and 21-34 is/are rejected.
- 7) ☒ Claim(s) 5, 15, and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 11-14, 16-19, 21-24, 25-28, and 29-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Gregg.

Regarding claim 1, at col 1, lines 18-18-19 and col 2, lines 30-34, Gregg teaches a disk drive having a transducer (head) moving over a plurality of tracks during a seek to a particular track. At Fig 5, Gregg teaches an asymmetrical sine wave acceleration trajectory used in a seek mode.

Regarding claims 11 and 25, Gregg teaches at Figures 2 and 3, a disk, spindle motor, transducer (head), actuator (cartridge arm), controller (processor), and VCM. Fig 5 teaches the asymmetrical sine wave acceleration trajectory.

Regarding claims 16 and 29, Gregg teaches at col 4, lines 24-25 the MEM stores programming for the disc drive operation.

Regarding claim 21, this is a method claim drawn to the method of using the corresponding apparatus claimed in claim 11. Therefore method claim 21 corresponds to apparatus claim 11 and is rejected for the same reasons of anticipation as used above.

Regarding claims 2, 12, 17, 22, 26, and 30, Gregg teaches in Fig 5, waveform 270, the asymmetrical sine wave acceleration trajectory has a degree of acceleration that is less than a degree of deceleration.

Regarding claims 3, 13, 18, 23, 27, and 31, Gregg teaches in Fig 5, waveform 270, the asymmetrical sine wave acceleration trajectory that has an acceleration section with a greater duration than the deceleration. The deceleration moves twice the magnitude in the same period, so the acceleration is half as slow.

Regarding claims 4, 14, 19, 24, 28, and 32, Gregg teaches in Fig 5, waveform 270, the acceleration section has a lesser degree of acceleration and has a longer duration.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gregg in view of Chu et al. (Chu).

Regarding claim 33, Gregg teaches all the elements in the claim except for a slider, head gimbal assemble, actuator arm attached to the head gimbal assembly, and a bearing assembly that the actuator arm rotates around. Chu teaches these features at col 2, line 61 to col 3, line 4. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the disk drive taught by Gregg with the

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additional elements taught by Chu; the motivation being the additional elements are structurally necessary to implement the disk drive of Gregg..

Regarding claim 34, Kobayashi teaches a controller controlling movement of the transducer in his Abstract. A voice coil motor is taught at col 4, lines 25-43. Kobayashi does not expressly teach a read/write channel. Chu teaches this feature at col 3, lines 14-26. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the disk drive taught by Kobayashi with the additional element taught by Chu; the motivation being the additional element is structurally necessary to implement the disk drive of Gregg.

Allowable Subject Matter

5. Claims 6-10 are allowed as the prior art does not teach or suggest the applicant's invention. Independent claim 6 teaches an apparatus controlling a track seek servo of a disk drive. The distinguishing elements of the claim are: a seek trajectory producer calculating a design position value, a design velocity value, and a design acceleration value by applying an asymmetrical sine wave acceleration trajectory function $a(t)$ in a track seek, mode; a first adder subtracting the actual position value from the design position value; a position control gain compensator obtaining a position correction value by multiplying a resultant value output from the first adder by a predetermined position gain for position correction; a second adder adding the position correction value to the design velocity value and subtracting the actual velocity value from the sum of the position correction value and the design velocity value; a velocity control gain compensator obtaining a velocity correction value by multiplying a resultant value output

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from the second adder by a predetermined velocity gain for velocity correction; a third adder adding the velocity correction value to the design acceleration value and subtracting the actual bias value from the sum of the velocity correction value and the design acceleration value to obtain an acceleration correction value; and an actuator varying a value of current supplied to the voice coil depending on the acceleration correction value to control movement of the transducer.

6. Claims 5, 15, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5, 15, and 20 teach obtaining the asymmetrical sine wave acceleration trajectory $a(t)$, and a velocity trajectory $v(t)$ and a position trajectory $x(t)$ that are based on the acceleration trajectory $a(t)$ according to the equations set forth in the claim.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mitchell R. Slavitt whose telephone number is (571) 272-7562. The examiner can normally be reached on M-F (6:30-4:00), 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571 272 7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MS *ms*
3/7/06



WAYNE YOUNG
SUPERVISORY PATENT EXAMINER